



# **Chelmsford Amateur Radio Society**

**Established 1936**

**Affiliated to the RSGB**

**Club Call Sign: G0MWT**

**President: Harry Heap G5HF**

**Chairman: John Bowen G8DET**

**Secretary: David Bradley M0BQC**

**Treasurer: Brian Thwaites G3CVI**

**Newsletter No 453**

**Web Address: [www.g0mwt.org.uk](http://www.g0mwt.org.uk)**

**October 2003**

## **Next Month's Meeting. The Annual General Meeting. Tuesday 7th. October, 7-30pm at the MASC.**

For as long as anyone can remember the October meeting is always the Annual General Meeting, an occasion when we can all take stock of our activities. Our Secretary David M0BQC provides us with the minutes of our last AGM, which you will find enclosed. It saves time at the meeting itself. Our Chairman will give us his report of the year's activities. Our Treasurer, Brian G3CVI, has managed to balance our books once again, as you can see from the enclosed accounts. He will remind us that subs. are now due and, with a bit of luck, he might advise that they remain unchanged for the year ahead. Wearing his other hat he will give us some observations about Membership.

Harry G5HF will, once again, carry out his Presidential duties and guide us through the procedure of electing the Committee for the coming year. Four Members of our Committee have advised that they do not wish to stand for the coming year for various reasons, but the rest have intimated that they are willing to stand again, with your approval. A number of names have been put forward. Anyone wishing to stand for election should make it known before or at the AGM. It's up to you, so please exercise your democratic rights!

It is sometimes felt that AGM's can be a bit of a bore! Not so as far as ours is concerned. It is always conducted in a lighthearted manner. The AGM is also the occasion for the presentation of awards to Members for their Construction efforts and to Members who have made outstanding contributions to the Club's affairs. It is also a pleasant social evening.

After the formal business of the evening there will be a question and answer session when a small, select, group of knowledgeable Members will endeavour to answer your queries concerning amateur radio.

**George G3UTC and Jean will be running the raffle this month, so please give them your support!**

### **Dates for Your Diary.**

<b>October 7</b>	<b>CARS Meeting. The AGM. MASC 7-30pm.</b>
<b>October 15</b>	<b>CARS Committee Mtg. Danbury Village Hall 7-30pm.</b>
<b>October 16</b>	<b>Essex Repeater Group. AGM. Danbury Village Hall 7-30 for 8-00pm.</b>

### **The September Newsletter.**

After we had printed the September Newsletter we were informed of the sudden passing away of Ralph Polley G3NAA. We were able to alter the emailed version with the sad news. It is therefore probable that there may be a number of Members who are unaware of this and will be surprised to read our appreciation of his life on page two.

We also apologise to Jim Smith for omitting him from the list of Members who had passed the Intermediate Exam. Belated congratulations, Jim!

### **Essex Repeater Group AGM.**

The Essex Repeater Group is holding it's AGM on Thursday 16th. October at the Danbury Village Hall at 7-30 for 8-00pm. There will be free refreshments and items for sale. There will also be a raffle, with free tickets for visiting Members. Sounds far to good to be true! All are welcome. Interested? Then contact Murray Niman G6JYB ERG Secretary on email: [mjniman@iee.org](mailto:mjniman@iee.org) and their website is [www.essexrepeatergroup.org.uk](http://www.essexrepeatergroup.org.uk).

**CARS meets at 7-30 pm on the first Tuesday of the month at the MASC , Beehive Lane, Chelmsford.**

**For details contact our Secretary: David M0BQC on 01245-602838.**

**Club Nets: Tuesdays 8-30pm: (2nd) 145.375 : (3rd) 1.947 : (4th) 1.947 : (5th) 145.375. All +/- QRM.**

**Newsletter Editor: Geoff G7KLV 01245-473822 or email: [geoff@g7klv.free-online.co.uk](mailto:geoff@g7klv.free-online.co.uk)**

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**Please advise changes of address to Geoff G7KLV.**

## Last Month's Meeting. Simple Antennas by Paul Prior G8IXC.

After the success of Paul G8IXC's first talk to the Club on ATV last November his return visit was eagerly awaited.

He certainly didn't disappoint. This time Paul chose to give a talk on Simple Antennas. The emphasis was on antennas for the 1.2 GHz and 2.4 GHz Amateur Television bands, however, all the designs he showed scale quite easily to the other amateur bands.

Paul started by going over the basic antennas types; isotropics, dipoles and ground-planes. A balloon was put to good effect to illustrate the different types of radiation pattern that each antenna produced. Although ground planes are quite popular they can have a high angle of radiation but Paul showed this can be reduced by sloping the ground plane elements downwards.

Paul then went on to cover Yagi antennas. With these high gains can be achieved in one direction by simply adding more director elements although after about 15 directors you start hitting the law of diminishing returns where doubling the length starts giving far less than 3db extra gain. A solution to this is to stack the yagis to give more gain. Paul showed us an omni directional antenna which used the principle of stacking to give high gain all round coverage. This antenna comprised 35 stacked dipoles which gave an impressive 20db of gain. Its drawback was that the radiation pattern while omni directional was also very thin so it would be no use on top of a mast that waved about in the wind.

Optimising the spacing between the elements to minimise unwanted sidelobes used to take many days of painstaking trial and error but these days the use of PC based antenna design software greatly speeds up the process. (Suitable programs can be found in the "Antennas" folder on the CARS CD). Computer designed Yagis do however, have their drawbacks as in practice it's not possible for the average amateur to work to 3 digits of precision and use "perfect" materials.

The actual mounting of any antenna can present significant problems. Nearby objects such as roofs, chimneys or trees can have a significant effect on the polar diagram, let alone the effect of the metal mast which supports it. Getting the antenna as high as possible will help matters but in the real world you can rarely achieve the perfect polar diagrams given by PC programs.

The G8IXC approach to antenna design revolves around making the antennas as simply as possible using nothing more than balsa wood, lengths of thick wire and kitchen foil. The resulting antennas may not survive long when mounted outside exposed to the elements but they are quick to make and are quite good enough to be

used to demonstrate the performance of a new design. The weather is not the only hazard when antennas are mounted outside. For those living on the coast there are seagulls who seem to be the worst hazard of all. The weight of these birds can be more than enough to bend the elements as they use your latest antenna creation as a perch. Here sturdy reflectors and extra support for the boom is a must.

Even commercially built antennas are sometimes not as good as they could be and Paul showed us one such antenna for 23cm. This had a folded dipole (300 ohm impedance) which was fed directly with coax resulting in an SWR of 5:1. He started by correctly matching the antenna and then replaced the reflector element and moved it closer to the folded dipole. The result of these changes was more than 2 dB improvement in forward gain and a near 1:1 SWR. So don't believe that manufactured antennas are necessarily any better than those you make yourself!

Also Paul warned us about taking measurements published in books too much for granted. Apparently there is one design in a VHF/UHF publication which gives the wrong element spacing. Unfortunately when things appear in print these errors get perpetuated.

It seems that reflectors are quite a fruitful area for experimentation. There is no reason why only one reflector element should be used and Paul has been working on multi element reflector designs with additional longer elements mounted above and below the main reflector in a bow-tie shape arrangement. We look forward to seeing the results of Paul's experimentation at a future talk.

One design that Paul showed, one that I hadn't run across before, was the Double-Diamond antenna. This as its name implies has a double diamond shaped radiating element in front of a reflector and gives about 7 db gain. Paul also touched on helical antennas which generate circular polarisation. They are very broadband which is ideal for our large microwave allocations, their only drawback is that you loose 3db when working a station that has normal linear (horizontal or vertical) polarisation.

We were reminded of the hazards at microwave frequencies of looking directly into a ground mounted high gain antenna such as a dish whilst transmitting. Just one watt to a small dish antenna at 10 GHz can generate an ERP of a kilowatt which at those frequencies can cause harm if you get within a few centimetres of it.

There were many questions for Paul from the audience which showed that antenna design and construction continue to be one of the more fascinating aspects of our hobby.

Our thanks to Paul for a very entertaining and instructive talk.

*Report by Trevor M5AKA*

## **Ralph Polley G3NAA by Geoff G7KLV.**

Way back in 1992 I had just passed the RAE and had been invited by Stan, now G0SXX, to accompany him to one of the local rallies. I seem to remember it was the Colchester event. Also in the car on that occasion were Alan LSH, Tom INM and Ralph G3NAA. Very much a new boy, I was made most welcome by all of them - the true spirit of amateur radio? That was the first time I had met Ralph. He was instantly friendly and helpful. And that, it seems to me, just about sums up Ralph's personality to a T!

G3NAA was licensed in 1958, so he had been around the amateur radio scene for about forty five years before he suddenly passed away, to the surprise and shock of his family and friends. What is so surprising is that less than a week before his passing he was at Sandford Mill and seemed so well, confident and cheerful. That is how I will always remember him.

Ralph was born in 1924, the son of a solicitor. As a boy he went to the local Grammar School, KEGS. On leaving school he joined his Father for a short time but soon found that he had no ambition to be a pen-pusher. Ralph was a practical, hands-on man and after National Service in the RAF he joined Marconi's, employed in the photographic department, operating the huge camera, now at Sandford Mill.

In the meantime he had met Marie and they were married in 1955, their years together being very happy ones, being blessed by two sons, Simon and Mark, the latter always referred to as the 'Young Master'. Ralph was always a family man and is remembered with affection by his sons and grand children, involving himself with their activities. After spending some time at Marconi's he joined the Milk Marketing Board, where he tested milk samples in the laboratory. He enjoyed his life there but eventually after sixteen happy years he was forced by redundancy to seek further employment as Laboratory Technician at Hylands School, retiring in 1989 at the age of 65, to start his very happy retirement years. He spent his time wood working in his shed, helping Marie in their garden and supporting her in her activities, offering valuable support to Mark in his upholstery business and, of course, in his shack on the air.

Although he had built his own receiver and transmitter in the early days, he went on to use commercially manufactured equipment. He used a G5RV and later a 'G Whip' and his log book reveals good DX. He was on the various nets, especially the 21 net, where he frequently took over from Tom and Tony when they departed for their HF assignments. Ralph will be remembered by many for being so helpful to nervous beginners and how considerate he always was to everyone who knew him.

Ralph's other interest was with the Friends of Chelmsford Museums. Marie is a Committee Member and actively involved in their affairs. Ralph was not a committee man! He was a doer and gave Marie unfailing support in her activities. He was her 'gofer' and helped her, particularly in providing refreshments at museum functions. So, there is another organisation which will miss him.

His cheerful personality will be sorely missed at CARS meetings but the Club is fortunate to have a lasting memento of his woodworking skills in the beautifully made hammer and gavel used by our Chairman to call our meetings to order!

Ralph's cremation was well attended, the chapel overflowing with family, friends and a large gathering of CARS and FCM members. Fred G6FXM paid tribute to him in a moving eulogy, composed with the help of the family and his other close friends Ken G7RFT, Stan G0SXX, Tony G4YTG and George G3GNQ. I am grateful to them for providing the substance of this tribute to a very good friend.

We will all miss Ralph G3NAA and offer our condolences to Marie and her family in their sad loss.

Marie would like me to convey her thanks to CARS Members who attended the cremation.

## **A Remarkable Coincidence, The Chairman's Log. by Charles G0GJS.**

*As well as being Vice President of CARS, GJS is also Chairman of ROARS, the Radio Officers Amateur Radio Society.*

On Saturday June 21st, the occasion of the presentation of the Radio Officers' Association plaque to the Godalming Museum in Surrey to commemorate the life of Jack Phillips, the Chief Wireless Telegraphist of RMS "*Titanic*", David Barlow G3PLE operated the ROARS call MXOROA from his QTH in Cornwall for two hours. I followed on using the same callsign from my station at Chelmsford for a further period. David worked both SSB and CW on 7Mhz and after a brief period on the same band where I found conditions rather poor, I changed frequency to 14033 MHz. and continued with CW contacts throughout my watch. In total, we dispatched 62 QSL cards which were specifically designed for the event by David.

Conditions for me were much improved on 14MHz. and I found myself working many European amateurs who were very interested in our Special Event operation and spoke with warmth about Jack Phillips and his heroic operation aboard *Titanic*. Quite 'out of the blue'

Warren Erbitt K2UVV of NY State, who had been monitoring my broadcasts (I don't like 'rubber stamp' QSOs!), called me. Warren told me he was a first cousin of David Sarnoff who, as an extremely bright 21 year old first class telegraphist working for Marconi Wireless Telegraph of America, received from Jack Phillips' the distress messages on Sunday 14th April 1912 and worked for three days and nights without respite handling an enormous flow of news traffic. Warren said that he lived in the Bronx for a short period with his cousin.

Nine year old David Sarnoff arrived in the United States in 1900 and at the age of 15 was an office boy at the American Marconi Company and by his application and zeal, including home experimentation radio work, rose rapidly through the ranks of the company. The American Marconi Company was forced to sell out at the insistence of the US Government who in 1919 would not have their national communications in the hands of a foreign organisation and the Radio Corporation of America came into being. David Sarnoff, who in 1916 was Contracts Manager, went on with the newly created company and the emigrant office boy became Chairman of the mighty RCA, and an icon in the world of telecommunications.

My log shows that my QSO with Warren K2UVV commenced at 1422Z and it was completed at 1430Z - the precise moment when our ROA Chairman Brian Cotton made his presentation of the Jack Phillips' plaque to the curator of the Godalming Museum.....

## **Ancient & Modern by Dave G3PEN**

I'm trying to thin down my collection of papers, magazines, handbooks etc (doesn't paper weigh a lot?), and while starting to sort it I came across some adverts from Wireless World of 1952. I thought some extracts might bring back memories to some of you.

H.P. Radio Services of Liverpool offered "good used R1155s" at £7/10s each, plus 10/- p&p. For the same again, you could get a matching new power supply and audio output stage, with speaker. U.E.I. Corporation of Gray's Inn Road offered brand new tested R1155s with PSU for £16/19/6, plus 15/6 p&p. Universal Electronics of Lisle St. offered an AR77E for £35, Eddystone 640s at £23, and 680s at £60. Charles Britain of Upper St. Martin's Lane had CR100s for £25, and "red" Sylvania EF50s at 8/6 each. (They were supposed to be better than the silver British ones - were they?)

Lasky's Radio of 370 Harrow Road (remember them?) also had a special offer of new R1155s for £11/19/6 - a bargain it appears - and

W1191A frequency meters (the poor amateur's BC221) for £8/19/6. Something a lot of people would still like to buy was a complete range of American Tuning Units - 14 in all, including the TU5B, TU6B and TU9B - very desirable items with large variable capacitors and big silver-plated tapped coils - smashing! Lasky's annual staff holiday was announced, when they'd be closed - 20th to 29th September. Not a lot, was it, and not the best time of year either.

Henry's of 5 Harrow Road was a favourite of mine; their advert in WW was brief, but they supplied a 28-page catalogue, full of transmitting equipment, as well as the usual receivers and components. I should think some of the old catalogues are "collectors items" now. In the mid-60's, I once bought 12 various Command Receivers from them, for 2/6 each, complete but very dirty outside - possibly almost the last they ever sold. It wasn't easy getting them home, but, roped together, they did at least give me a seat on the Underground train that evening (and some funny looks).

Finally, Elpreq of Ruislip and Fleet St. (not a company I remember from the 60's), again with the ubiquitous brand-new R1155 for just £4/17/6! Actually, the headline was a misprint, as the price quoted in the blurb was £14/17/6, but I bet it caught the attention of readers. I wonder if it was an accident? Somewhat surprisingly, a very expensive item was a light-weight sensitive relay, "ideal for radio control work", which was priced at 13/6d. Perhaps having two solid-platinum c/o contacts had something to do with it

As well as for amateur radio, 1952 was the heyday of the home-built television receiver, with no less than 5 TV transmitters in operation in the UK, on Band I. All the traders had ex-WD equipment, designs and special bits and pieces to build the "ultimate" TV. Tube sizes ranged from 4" to 12" diameter, and magnifiers, usually filled with paraffin or oil, could be had for the smaller tubes. Do you remember the mess when one of those leaked, as they were prone to do?

## **Trials & Tribulations of a Radio Interference Officer (RIO) by Dave G3PEN.**

Although the problems of TVI from amateur TXs don't seem nearly as bad as they once were, I can't help thinking that we have it easy, compared to a little problem I met while in GPO HQ Radio Interference & Investigations Branch. (We also tried to sort out pirates, and other problems, as well as interference).

I was given the job of looking at a source of interference to the entire long and medium wave broadcast bands, and to BBC TV - in Banbury, I think it was. The local reception was being wiped out for a large portion of the town, although it varied very much with time, particularly for TV. The source had been easy to find - a local

company (of great renown in radio circles), who made aluminium tubing for aerial supports and aerial fabrication.

They had recently invested in a new machine, from America, which took in flat metal strip at one end, rolled and welded it in a continuous process, and extruded tubing at the far end, neatly chopped into 20ft lengths. The metal came on enormous rolls, containing many hundred feet of strip, sitting outboard of the machine at the input, and the output end had well over 20 feet of tubing sticking out before each cut was made.

The machine rolled the tubing progressively, from the flat, which took up some twenty-odd feet of distance, and then welded it with probes on the inside and outside of the tube, just as it closed up. The welding was done with a radio-frequency arc from a very powerful RF generator, with 500kW input power. The frequency was roughly stabilised, at about 250kHz. There was essentially no RF filtering anywhere on the machine, except in the mains supply leads, and the arc was applied directly to the very long strip being welded.

The total length of the machine, its input feed and its output end was about 50-60 feet overall, but every few seconds this was shortened by 20 feet, and then extended again. Consequently, the electrical loading on the RF source kept varying, giving a cyclic frequency change of quite a few kHz. The radiation or aerial effect of the machine also varied over the cycle, so all the various harmonics (and there were hundreds!) had a cycle of varying radiation efficiency. At TV frequencies (Band I) the swing was sometimes several MHz. All in all, it was one of the most fearsome RF interference sources I'd ever met at that time, and made the average bread-board 813 PA of the time look quite innocuous.

The cure was well beyond my limited capabilities! My mobile test-coach was full of measuring equipment; special test suppressers for unusual interference sources etc, but nothing I had could have tamed this monster. I ended up making interference level measurements, for future reference, and helping short-term in putting the basic frequency where it didn't sweep across the local BBC TV channel every few seconds. Beyond that, the American maker had to supply a full suppression kit, at horrendous expense. Later tests showed a vast improvement, especially for TV, but the local radio reception was never quite as clear as it ought to have been.

Incidentally, while I was there on one visit, the machine had hiccups, and failed to cut the piping correctly. Within seconds, there was over 60ft of 2" tubing flailing about at the output end, with everyone running around frantically. I thought at the time how nice a 66ft one-piece vertical would have been for Top Band and 80m. Well, we can dream, can we not?

## **Marconi Limerick.**

Way down in the little town of Electron  
Way out beyond 'Anode Bend'  
Lies the grave of a Radio Officer  
Who is earthed at the positive end.  
Now he was good at his job in all fairness  
To give him his due he had brains  
But was once a little careless  
While fixing a plug to the mains.  
There is a moral to this story  
A moral, an infant can see  
If you don't want a Short Circuit to glory  
Don't frolic about with H.T.

*Author unknown! Given to me by a rather special lady friend, one has to be of a certain age to appreciate this!*

## **Members News.**

### **Tony G4YTG.**

Many Members will be aware that Tony G4YTG has been ill recently but for the benefit of those who haven't heard we give a brief summary.

A few weeks ago Tony was under the weather and after some tests he was operated on and has had a double heart bypass operation. He was in Barts for a week or so before being discharged and has the highest praise for all the staff there.

Surprisingly, he is very comfortable and only suffers twinges of mild discomfort. He is mobile around the house and by the time you read this he should be taking daily walks.

He is hoping to be with us at the AGM but until then all the best Tony from your many friends.

### **Harry G5HF.**

Harry is our President, which is an honorary appointment and one that he fulfils with a certain panache!

It is almost beyond belief that he has been a licensed amateur for seventy years. It was back in the mid 1920's when he was nine that he had become interested in boats and the sea, an interest which is still with him today. He had been reading about the naval battles of WW1. They had fascinated him and he found them very exciting, not quite realising the ghastly horrors of war. He lived at Wimbledon in south London and like many local boys sailed their boats in the pond on Wimbledon Common. Oh how wonderful it would be if they could remotely control their boats and have battles with guns, smoke, torpedoes and sinkings!

Then in 1928 he saw an article in 'The Boys Own Paper' entitled 'How to Build Your Own

Radio Controlled Model Boat'. Eureka, that was it! It was not state of the art circuitry but there was one bonus: you could make almost all the components yourself.

The transmitter was a spark design using a Ford ignition coil and the receiver used a coherer which could be purchased from Gamages for 5shillings. The coils were made from the formers of toilet rolls dipped in paraffin wax and the condensers from 2lb. jam jars lined inside and out with tinfoil, from discarded tea boxes, stuck to the glass with Seccotine, a smelly animal glue, but a good sticker. No Araldite in those days!

The Ford coil was mounted in a beautifully finished wooden box filled with paraffin wax. It had a trembler at one end and designed to work from a six volt battery but Harry used 12 volts getting a 2 inch spark between knitting needles.

The 5 shilling coherer was out of the question on tuppence a week pocket money (all used for sweets). Enter Mr Heap senior. He was the manager of a gas mantle factory. He took young Harry along to the factory and enlisted the aid of the chief engineer and the chief chemist.

Iron filings were required for the coherer but the sort found in chemistry labs were too fine so the engineer took a file to some iron, producing some of the right size, albeit a shade greasy. No problem; the chemist washed them in Ether, abundant supplies being to hand as it was used in the manufacture of said gas mantles.

After a great deal of patient construction and ingenuity had been expended it was at last time to do some preliminary tests.

On the fateful day a small procession headed for Wimbledon Common: the chief engineer, the chief chemist, young Harry and Mr. Heap senior, who tagged along just for a laugh! They set the spark transmitter and the boat on the bank. They degreased the iron filings and tested the system. OK so far!

The boat tiller was kept central by a spring, and solenoids were fitted to both sides to attract a soft iron strip attached to it. A four way switch operated by a pawl and ratchet allowed selection of the boats heading, position 2 for starboard, position 4 for port and 1 and 3 for straight ahead. The receiver operated the electro-magnet connected to the switch.

They launched the boat, switched on the 6 volt motor, pointing it out to mid pond. A burst of wireless waves turned the boat to starboard, a further burst and it straightened up and the third burst sent it to port while the fourth burst set it straight again.

They then tried to coax it back to shore but to no avail and it just executed tight circles in the middle of the pond. With the help of a very intelligent dog it was finally brought back to shore! The trouble was that iron filings rust over very quickly in the humid atmosphere just above a

pond! By using nickel filings satisfactory results were eventually obtained.

Harry enjoyed operating the spark transmitter and, in the meantime, learnt Morse. His interests turned to wireless communication and he constructed a one valve receiver from a Telsen kit. This had a reaction control and if it was advanced too far it produced oscillations and could be heard in the family receiver! Harry had read that if the anode current of an oscillator was modulated you could transmit speech. So he inserted a pair of headphones in the anode circuit and shouted into them. The signals could be clearly heard by Mum in the receiver.

He read that a licence was needed to do that sort of thing and joined the RSGB and tried to get an 'Artificial Licence' by saying he wanted to experiment with oscillators. It wasn't as simple as that!

A well known amateur John Curnow G6CW nearby acted as his Elmer and he eventually got his licence in 1933 by saying he wanted to experiment with aerials. Because he was under 21 it all had to be done by his Father.

*The above is a condensed version of an amusing article that Harry wrote for the Newsletter a few years ago. The full version is well worth reading and is on the CARS Newsletter CD*

*We offer our congratulations and best wishes to Harry on the 70th anniversary of his first licence.*

## **New CARS CD.**

Trevor has produced a new version of the CARS CD which will be available at the AGM in October. This will include some new software by Simon Brown HB9DRV. Simon has recently produced an excellent program Ham Radio Deluxe which allows full control of Yaesu and Icom rigs from your PC. Other software from Simon on the CD are PSK31 Deluxe which he finds to be the best of all the PSK31 programs and Mapper. This produces a map showing where in the world you've worked and is ideal for use when demonstrating Amateur Radio to the general public at special event stations and activities such as JOTA.

With the recent revival in contest working in the Club he's included TACLog, a VHF/UHF Contest logging program which is used by the CARS Contest station.

The CD will also feature pictures from recent CARS meetings and events as well as the latest PowerPoint slides which will be used in this Autumn's Foundation and Intermediate Courses.

## **144 MHz AFS Contest.**

Our Contest Manager is appealing for operators for the AFS contest on Sunday 7th. December. If you are interested contact Chris M5CSM on 01621-840923 or 07719-915872 or email at [contests@g0mwt.org.uk](mailto:contests@g0mwt.org.uk)